Abstract of the Disclosure

The present invention relates to a semiconductor chip and the like provided with a structure, which is applicable to a terahertz electromagnetic-wave device and capable of further reducing the life of the carriers. The semiconductor chip comprises a single crystal semiconductor substrate and a Group III-V compound semiconductor layer. The Group III-V compound semiconductor layer is characterized in that, in the vicinity of the surface, the concentration of Group V atoms is higher than the concentration of Group III atoms, and in that oxygen is included therein. In the Group III-V compound semiconductor layer, many As-clusters are deposited. It is known that the As-clusters function as a main factor for capturing the carriers; particularly, it is known that As-clusters near the upper surface of the Group III-V compound semiconductor layer contribute to the capture of carriers. Also, the Group III-V compound semiconductor layer includes oxygen; and due to this oxygen, a deep level is formed. Accordingly, in this semiconductor chip, the As-clusters near the upper surface significantly increase, and the life of the carriers can be further reduced due to the included oxygen.